GROUNDWATER REPORT
OAK PRAIRIE

NW1/4 Sec. 19 - T. 10N., R. 5E.
NW 140th & West Holdrege Road

LANCASTER COUNTY

Petitioner: Brian D. Carstens
Brian D. Carstens & Associates
Developer and Owner of Record:
Oak Prairie, LL.C.
Engineer: Lyle L. Loth
Surveyor: K&M Surveying Services, Inc.
Hydrogeologist and Preparer of Report:
Vincent H. Dreeszen

December 9, 2003

Report of Groundwater Investigation

OAK PRAIRIE

NW1/4 Sec. 19-10N-5E

Lancaster County

Oak Prairie is a Community Unit Plan located at Northwest 140th and West Holdrege Streets. The preliminary plan proposes the development of 9 single family lots and 1 outlot in the NW1/4 Sec. 19, T. 10N., R. 5E. The current zoning for the quarter section of land is "AG" and the proposed zoning is "AG" with C.U.P w/20% density bonus for farmland and open space preservation. Nine single family lots of slightly more than 3 acres each encompassing a total of about 27.88 acres are located in the north half of the quarter section (Figure 1). Suitable portions of outlot A are planned to be utilized for tree farming and the remainder in open area.

The south boundary of the tract is Interstate 80 and the north boundary is West Holdrege Street. The west boundary is Northwest 140th Street (Lancaster-Seward County line) and the east is the half section line. The Village of Emerald is about 3 miles east and Pleasant Dale is one mile west and 2 and one-half miles south. A few houses have been constructed west of Northwest 140th Street in Seward County, north of West Holdrege Street and south of Interstate 80.

The developer proposes the construction of individual wells and the use of individual waste water systems, percolation test permitting, and if not lagoons shall be installed. The irrigation well and two or more ponds constructed on the drainage trending west to east are planned as the source of water for watering trees.

The principal and essentially the only aquifer in the area is the Dakota Sandstone Formation. The Dakota consists of interbedded sandstones and clays. The sandstones are generally fine grained and are bounded by clays acting as aquitards. The sandstones may or not be connected and water in them is considered to be confined or semi-confined. The Dakota lies at relatively shallow depths and is recharged locally by precipitation.

A number of test wells or wells have been drilled on the property and a rather exhaustive and comprehensive series of hydrologic testing was done by Nickel Engineering in the latter half of 1999. A letter report and summary of the results of pump testing was provided to the land owner, Mr. Trent Anderson June 6, 2001. The aquifer test results were reviewed by Dr. Dean Eisenhauer and reported to Mr. Anderson in a letter dated June 21, 2001. The two reports were reviewed by Scott Summerside, Associate Geoscientist, Conservation and Survey Division, UNL in a letter to Mr. Anderson August 24, 2001. Copies of the three letters are attached in an appendix to this report. The consensus

expressed in each of the three letters was that the groundwater supply and that provided from diverted or impounded surface water was adequate to supply irrigation water for (at that time) a proposed golf course. Mr. Summerside noted that the Dakota is relatively near the surface and the lack of impermeable overburden permits recharge to the aquifers. He also noted that saline water is known to occur in the formation of depths greater than the depths of existing wells.

The author of this report visited the property in 1989 and 1999, located wells, obtained logs and sampled two of the wells for chemical quality water analyses. Since that time considerable additional information has been made available, much of which is on file with the Conservation and Survey Division, UNL. As part of the water resource research done in 1999-2001 several test holes were drilled and four observation wells were constructed, A,B,C,D (Figure 2). Three two-inch monitoring tubes were installed within the 10-inch casing in monitoring wells A,C and D and were screened at different intervals to determine behavior of water levels in separate portions of the Dakota as the irrigation well was pumped. Monitoring well B-4, about 400 feet north of the irrigation well, was screened in only one interval. Three separate pump tests up to 72 hours in duration were conducted. The irrigation well was pumped at 230 gpm. The procedure and the results of the continuous and cyclic pumping tests are described in the June 6, 2001 letter from Nickel Engineering, Inc.

A drawdown of about 5 feet was noted in the Monitoring Well C-5 (screened from 150 to 175 feet) during the 72 hour pumping test. Monitoring well C-6, screened from 100 to 120 feet in the upper part of the aquifer recorded a drawdown of only 0.25 feet. Monitoring Well C-7 was screened above the water table and was dry. During the cyclic test, static conditions in these two wells in the northwest corner of the property recorded drawdowns of 0.2 feet in the upper portion and 2.9 feet in lower cased portion. Wells C-5 and C-6 have been monitored by the Lower Platte South NRD since April 13, 2000. Hydrographs of those two wells are attached in the appendix.

A drawdown of 7.5 feet was recorded in Monitoring Well D-8 near the east side of the property during the 72-hour test. The well is screened from about 130 to 150 feet. Monitoring wells D-9 and D-10 are screened in alluvium above the Dakota and were essentially not affected by the pumping.

All of the observation wells except Monitoring Well A-1 recovered to or near their pre-pumping levels at the end of the 72-hour pumping test. Well A-1 is about 200 feet north of the pumped well and the water level was about 2.5 feet lower several hours after irrigation well was shut off.

As previously noted recharge to the Dakota aquifer is from local precipitation. As such water levels can be expected to respond to wet and dry periods. Included in the appendix is a copy of the hydrograph of USGS Monitoring Well 10N-5E-29DD1

located about 2 miles south and 1½ miles to the east. The record of this well measured since 1983 shows fluctuations of about 10 feet between wet and dry years. Water levels have lowered about 5 to 7 feet since the mid-1990s. This drop in water levels is similar to that measured in Monitoring Well C-5 since April, 2000. Water levels to October, 2003 have lowered about 5.5 feet. Because water levels are known to fluctuate due to climatic conditions and to pumping of other nearby wells, well drillers and domestic well land owners should make certain that the pump be set sufficiently deep to account for this phenomenon. It can be expected that water levels will recover after climatic conditions have improved over those of the last few years.

The location of wells in the area are shown in Figure 2 and information about the wells are summarized in Table 1. Logs and additional information with respect to registered wells are available from the Nebraska Department of Natural Resources.

Water samples were collected for analysis from four wells at Oak Prairie and one from a nearby domestic well. The results are summarized in Table 2. The water quality is excellent for domestic use. Total dissolved solids, sulfate, sodium, chloride, Nitrate-Nitrogen, iron and manganese are all quite low. The water is relatively hard ranging in value from about 200 to 270 mg/l. The irrigation well has been sampled twice, 1998 and 2003. The values are essentially the same with the exception of iron in the second test. The higher level of 0.7 mg/l is probably due to the

well not having been pumped a sufficient length of time. Nitrate-Nitrogen is above acceptable limits in the domestic well in Seward County. The elevated levels are almost certainly due to a localized source. Nitrate-Nitrogen levels are quite low in the rest of the sampled wells. One of the earlier tests on the domestic well, Well Number 3 had coliform bacteria. It is my understanding the well was chlorinated and a later test showed no contamination. Some users may wish to use a water conditioner for hardness. In summary, the water quality is potable and would be rated as excellent.

The water supply in the development is adequate for domestic use and as a supplement for irrigating the proposed tree farm if used in combination with rainfall and surface water impoundment. This assumes that water for irrigation use will be directly from stored sources and that cyclic pumping from a well or wells will be used to pump into the impoundments.

Based upon existing and available information the proposal as presently planned the supply is adequate and should have minimal impact on other users. It is recommended that Monitoring Wells C-5 and 6 and D-8 be retained. The wells should be properly protected and secured with a locked cap. Monitoring Wells A-1, 2 and 3 and B-4 may have no additional use and probably should be properly decommissioned.

Before construction of a home site on the proposed lots, a test well should be drilled to determine availability of water

and its quality.

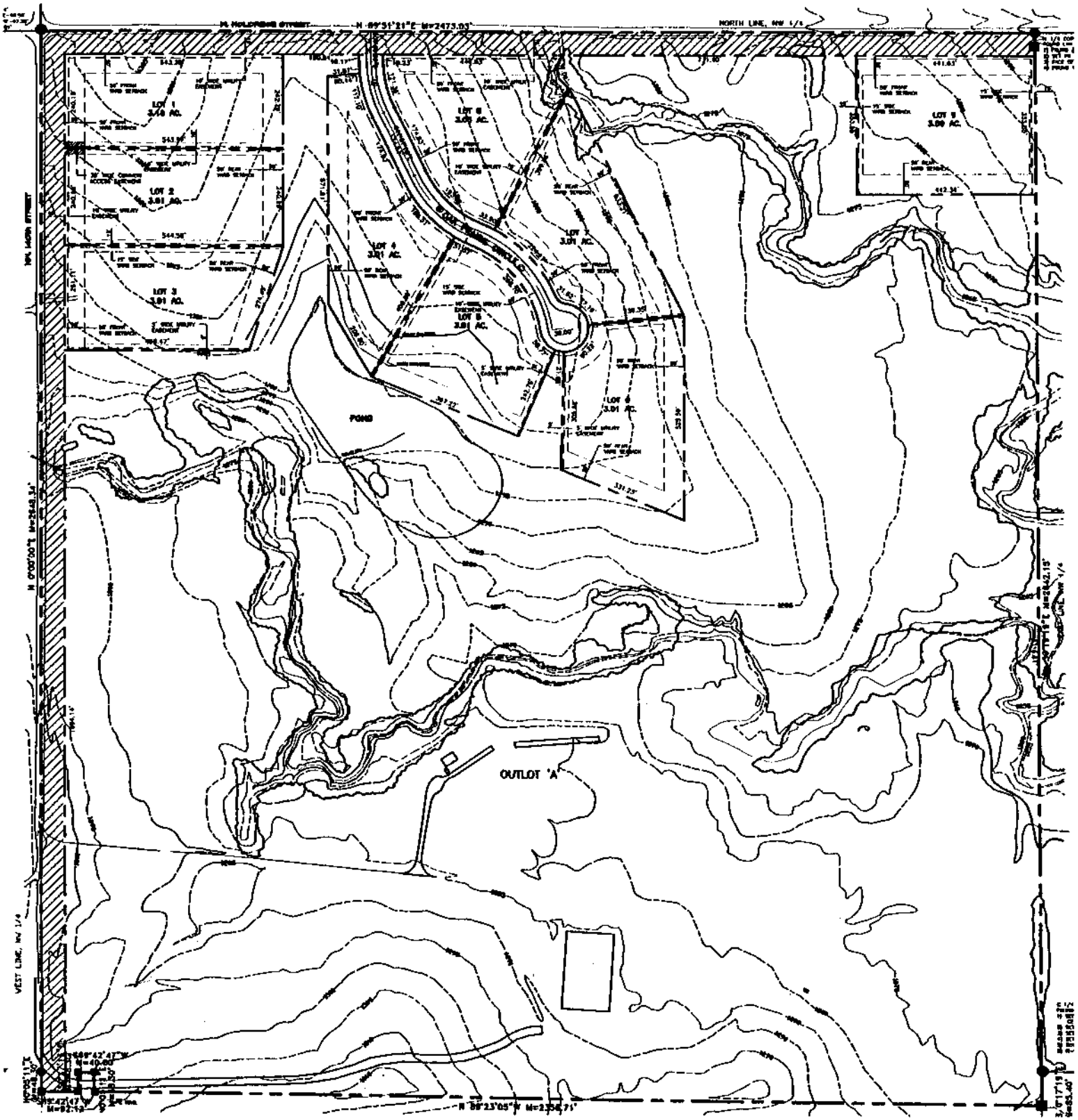


Figure 1. Oak Prairie, N.W. 140th and West Holdrege Street, Community Unit Site Plan.

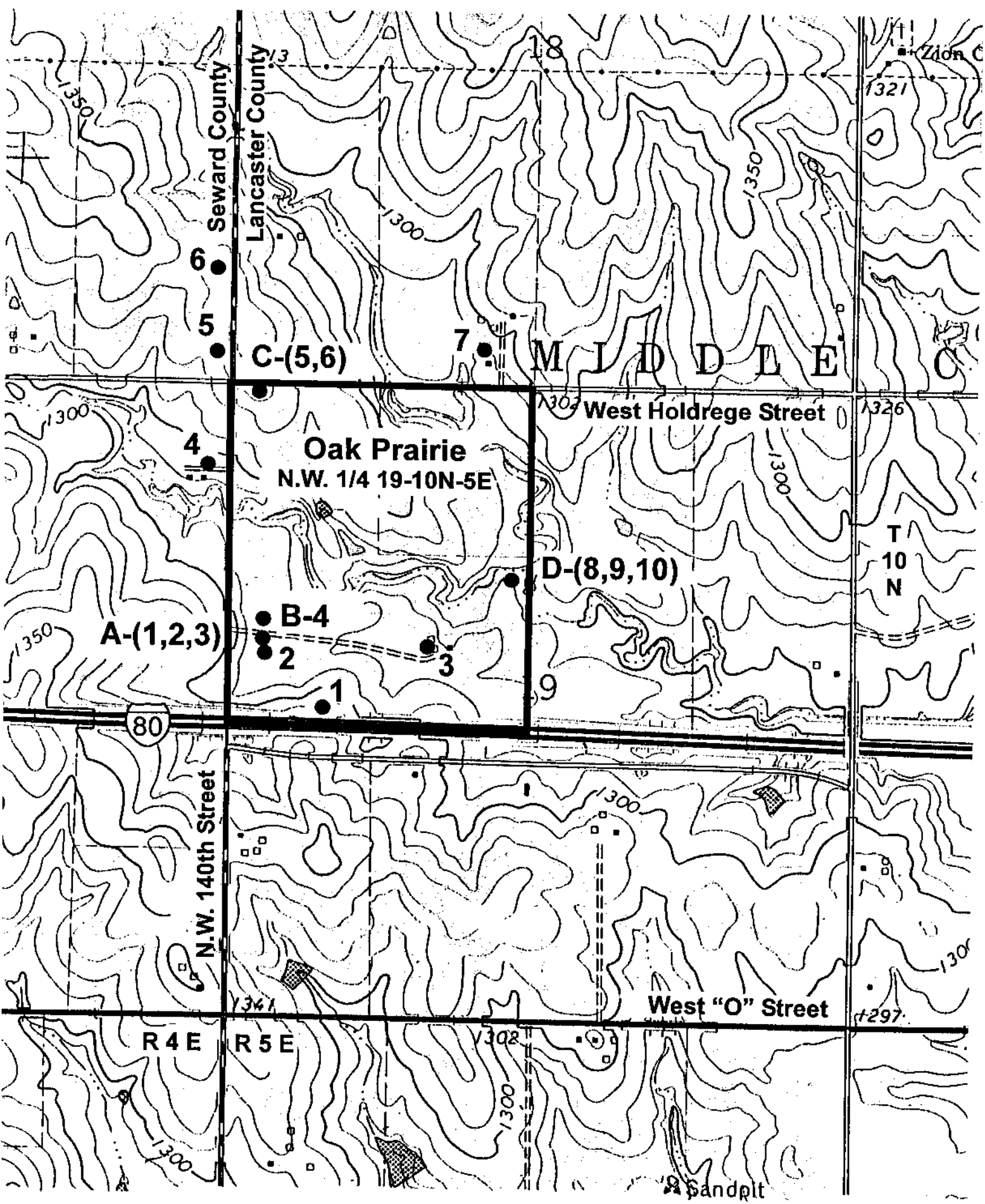


Figure 2. Map showing location of Oak Prairie. Well locations shown by symbol. Well information is given in text and summarized in tables.

OAK PRAIRIE
Table 1
Summary of Well Information

Well Number (1)	Registration Number	Location	Elevation in ft (msl) estimated	Total Depth	Water Levels and Dates Measured		Notes
1	Test Hole Abandoned	SW cor SE SW NW	1316	283	Est. 70'		Test hole drilled 8/14/89. "Tested at 265' - salt water", Blue Valley Drilling
2	G-101882	SW NW 2250' S 250' E	1288	189	42	2/17/90	irrigation well, 16" casing, yield 200 to 230 gpm.
3	Not registered	NE SW NE NW	1268	NA	NA		Domestic well, well log not available, water quality in Table 2
A	G-104129A	SW NW 2100' S 265' E	1292	A-1 185 A-2 100 A-3 45	46.5 47 22	11/22/99	Monitoring well cluster, numbers 1, 2 and 3 test drilled to 222'
B	G-104129B	SW NW 1950' S 265' E	1288	B-4 45	18	11/22/99	Monitoring well number 4, test drilled to 58'
C	G-104129C	NW cor NW 50' S 225' E	1335	C-5 175 C-6 120 C-7 40	94 96.8 78.7 80 Dry	11/22/99 01/27/03 11/22/99 01/27/03	Monitoring well cluster numbers 5, 6 and 7, test drilled to 210' (See hydrographs in Appendix)
D	G-104129D	NE SE NW 1600 S 2300 E	1260	D-8 150 D-9 11 D-10 30	19.5 dry +10	11/22/99	Monitoring well cluster numbers 8, 9 and 10 test drilled to 150'
4	Not registered	SE NE NE Sec 25-10-4	1295	NA	--		Domestic well in Seward County, water quality in Table 2
5	G-093500	SE cor. Sec 13-10-4	1330	162	--		Domestic well in Seward County
6	G-101687	SE cor. Sec 13-10-4	1340	172	--		Domestic well in Seward County
7	G-100143	SE SW Sec. 18-10-5	1290	126	50	05/28/99	Domestic Well

OAK PRAIRIE
Table 2
Summary of Inorganic Chemical Analyses (mg/l)

Well Number	Total Dissolved Solids	Hardness Total	Alkalinity $CaCO_3$	Calcium	Sulfate	Sodium	Chloride	Nitrate (NO_3N)	Iron	Manganese	Fluoride	pH	Notes
2	322	208	202	64	25	22	18	1.5	<0.1	<0.05	0.41	7.4	Irrigation well 9/2/98 (1)
2	320	206	209.9	61	27	21	18	1.4	0.7	<0.01	0.29	7.7	Irrigation well 6/16/03 (Boron 0.10) (2)
3	320	208	237	64	14	24	22	1.0	<0.1	<0.05	0.43	7.7	Domestic well 9/2/98 (1)
B-5	346	239.2	257.2	71	18	23	6	0.2	<0.005	<0.001	0.40	8.05	Monitoring well (NW cor Sec. Screened 150-175' (2)
B-6	346	311	272.2	90	9	13	11	<0.1	3.8	0.200	0.50	7.92	Monitoring well (NW cor. Sec 19 screened 100-120' (2)
O'Connor 4	422	250	200.9	72	51	33	12	17.4	<0.005	<0.001	0.36	7.68	Domestic well – 11/7/03 (2)

(1) Analysis by the Nebraska Health and Human Services Laboratory
(2) Analysis by Servi-Tech Laboratories, Hastings, Nebraska

APPENDIX

To Groundwater Report

OAK PRAIRIE

ENGINEERING
INCORPORATED

7941 Portsche l ane
Lincoln NE 68516

Phone 402-423 0559
Facsimile 402-423-1859

June 6, 2001

Mr. Trent Anderson
Diamond Head Ranch
[illegible] 140th Street
Lincoln, Nebraska 68528

Reference: Agricultural Irrigation Well in SW1/4, NW1/4, Sec. 19, T10N, R5E
Nebraska Registration No. G-101882

Dear Mr. Anderson:

Nickel Engineering has monitored and reviewed pump tests and collateral observation well data for the referenced well under two differing protocols. The pump test protocols monitored were a continuous pumping test and a cycled, or pulsed, pumping test. Continuous tests were run in August, 1999, and both continuous and pulsed tests in November, 1999. In addition to monitoring the piezometers during the test, we have reviewed piezometer data collected from about June, 1999 to date. This letter presents an evaluation of the general geologic and hydrologic conditions at the site, the capacity of the well, and the effects of the well operation on neighboring properties.

Executive Summary

Groundwater at this site, within the depth of the well, is flowing in three identifiable aquifers. The semi-confined aquifers are capable of having artesian pressure, but there is some leakage between the aquifers. The general direction of groundwater flow at the site is from west-northwest to east-southeast. Seasonal fluctuations in aquifer piezometric levels within the last year have ranged up to 9 feet at a location near the Diamond Head Ranch north property line.

Three irrigation well pump tests of up to 72 hours' duration were performed to determine the effect of the well on the aquifers. In the first two tests the well was pumped continuously. In the third test the well was put through repeated cycles of pumping and resting, in the same manner that municipal wells are operated to minimize drawdown and operating costs. The sustainable capacity of the well in the continuous test and the average capacity of the well in the pulsed test were both found to be about 230 gallons per minute. The steady conditions achieved during the cyclic pumping test duplicate long-term cyclic pumping of the irrigation well.

Drawdown in piezometric head was measured in all three aquifers at several locations during the tests. Near the north property line, there was no water in the upper permeable sand stratum. Drawdown near the north property line during the continuous test was 2.9 feet in the lower aquifer and 0.2 feet in the middle aquifer. Drawdown near the north property line during the

cyclic, or pulsed, test was 0.08 feet (1 inch) in the lower aquifer; there was no drawdown in the middle aquifer. Neighboring registered domestic wells appear to be screened in what we are calling the middle and lower aquifers, based on their reported depths. The drawdown near the north property line of 0.0 to 0.08 feet in the middle and lower aquifers during cyclic pumping will be unnoticeable when compared to the respective seasonal variations (observed during only 1 ½ years of measurements) of 2.5 and 9.1 feet. The shallowest (unregistered) neighboring wells are thought to be screened in what we are calling the middle aquifer. There was no effect on this aquifer at the north property line, even after steady conditions were achieved, during the cyclic pumping test. Cyclic pumping is recommended for the irrigation well when the well must be used.

Geologic and Hydrologic Setting

It is important to have a basic understanding of the general geologic and hydrologic conditions at the site. Based on the well log, the well encounters three different water-yielding strata. From the data collected during the pump tests, these strata are generally described as semi-confined aquifers. Semi-confined means that the aquifers are capable of having head pressures above the groundwater surface (artesian effect), but are not entirely sealed. At this site the transmission of water from one aquifer to another is minimal, when it occurs. The geologic stratum identified at the base of the well is a shale aquiclude or aquitard, of very low permeability, which prevents or minimizes any potential flow upward from lower strata.

At this site the groundwater contained within the aquifers mentioned is generally flowing from the west-northwest to the east-southeast. The groundwater flow through the porous aquifers mimics some of the characteristics of a river. Like a river, there is a gradient (elevation difference from upstream to down stream) that produces flow, and the quantity of water is derived from upstream. Natural fluctuations in the water level are related to precipitation events, which often reflect seasonal changes.

Pump Tests

Three separate irrigation well pump tests were conducted, two continuous and the other cyclic. Each of the continuous pump tests was conducted for 72 hours. In the cyclic or pulsed test, static conditions were achieved in under 12 hours, but the test was continued for a total of 24 hours. The sustainable capacity of the well in the continuous test and the average capacity of the well in the pulsed test were both found to be about 230 gallons per minute. Based on the data collected at the piezometers during the pumping test, the following summarizes the findings:

> During the continuous pumping test run in conjunction with the pulsed test, the piezometers located at the northern edge of the property experienced piezometric head drawdown of 0.2 and 2.9 feet. Changes in piezometric head above the top of the aquifer are a change in pressure and do not reflect directly changes in the groundwater elevation or volume. The pressure change is greater than the volume of water removed. The actual groundwater volume change at this distance is unmeasurable, because it is so small.

The cyclic pumping test consisted of repeated pumping, then resting, of the aquifer. During the cyclic test, the piezometers located at the northern edge of the property experienced greatly reduced piezometric head drawdowns of 0.0 and 0.08 feet, respectively, in the lower and middle aquifers, respectively, while a well yield similar to that of the continuous pump test was maintained. This method of well pumping is generally used for municipal well fields, where wells are located relatively close to each other, to prevent the well screens from being exposed to air due to the well drawdown. This method allows the natural groundwater flow to replace the groundwater removed. An analogy for visualizing the effects of the two methods of well operation would be to compare size and distance of disturbance if a large stone were thrown into a lake or if several smaller stones, totaling the same weight, were thrown into the lake in quick succession. For this site - in a flowing aquifer - the analogy would have to be moved to a river, where the disturbances disappear faster and the distance of noticeable effect also is reduced. Besides reducing the radius of influence of the well, cyclic pumping provides an additional benefit to the owner of the well in that the same total yield can be produced at a lower cost. Based on the pumping test, cyclic pumping of this well is a valid method of reducing potential drawdown at the property boundaries, while maintaining appropriate well yields.

For perspective, it is important to note that the drawdown is greatest close to the pumped well. The well closest to the agricultural irrigation well is the Diamond Head Ranch domestic well. During the hydrologic investigation of the agricultural well, there has been no indication of any adverse effects on the water supply for the domestic well, nor is there any indication of adverse effects in the past. In addition, no reduction in water quality of the domestic well has been indicated before or during this investigation. Also, it should be noted that the pumping of the agricultural irrigation well is permitted under the Nebraska statutes regulating such wells and that there are no pumping restrictions in this area. Currently the Lower Platte South NRD is monitoring the piezometers on the site and checking water quantity twice a year and will continue checking the piezometers when the well is put into operation.

Effects on Neighboring Properties

Monitoring of the piezometers over the last year-and-a-half shows the natural seasonal fluctuations of 2.5 feet in the middle aquifer and 9.1 feet in the lower aquifer near the north property line, which are within the range of seasonal fluctuations in western Lancaster County. Against this, the drawdown of the irrigation well in continuous cyclic operation, measured at 0.0 feet and 0.0.8 feet, respectively, is not significant. Based on well registration records, nearby domestic wells appear to be screened in what we are calling the middle and lower aquifers. The drawdown near the north property line of 0.0 to 0.08 feet in the middle and lower aquifers during cyclic pumping will be unnoticeable when compared to the respective seasonal variations (observed during only 1½ years of measurements) of 2.5 and 9.1 feet. The shallowest (unregistered) neighboring wells are thought to be screened in what we are calling the middle aquifer. There was no effect on this aquifer at the north property line, even after steady conditions were achieved, during the cyclic pumping test. Since the primary source of irrigation water for the proposed golf course will be diverted stream flow, the occasional supplementary operation of the irrigation well will produce no effect on neighboring wells screened in the middle aquifer and no noticeable effect on wells screened deeper.

Conclusion

Nickel Engineering has used accepted engineering procedures to conduct an evaluation of the general geologic and hydrologic conditions at the site, an evaluation of the capacity of the irrigation well, and an evaluation of the effects of the well operation on neighboring properties. Based on this investigation, there is no indication of any adverse effects of pumping this well on the adjoining wells, including the domestic well on site. In addition, the results of on-going monitoring conducted by the Lower Platte South NRD, will be available to all interested parties as verification of the effects of the use of the irrigation well to supplement surface water as a source of irrigation water for the proposed golf course.

We can provide assistance in understanding the information contained in this letter. Feel free to call us at any time if questions arise regarding this project.

Prepared by
Nickel Engineering, Inc.

Thomas V. Strauss, M.S., P. E.
Nebraska No. E-9540
Project Engineer

Stephen H. Nickel, M.S., P.E.
Nebraska No. E-3808
Principal Engineer

Dean E. Eisenhauer, Ph.D., P.E.
Hydrologic and Irrigation Engineering
3811 S. 32nd
Lincoln, NE
402-489-7994

June 21, 2001

Trent Anderson
Diamond Head Ranch Golf Course
900 N.W. 140th Street
Lincoln, NE

Subject: Groundwater Investigations at Diamond Head Ranch Golf Course

Dear Trent:

Executive Summary: The sandstone aquifer system that supplies the irrigation well at the Diamond Head Ranch Golf Course is semi-confined and non-uniform. Pumping tests conducted by Nickel Engineering indicate that during the 72 hour test, the cone of depression of the well does not reach an aquifer boundary. The aquifer is adequate to supply the well for long-term cyclic pumping.

I have reviewed the aquifer test data that were collected in 1999 at Diamond Head Ranch Golf Course.

The test results indicate the following:

- The aquifer is semi-confined as evidenced by the drawdown response in the observation wells.

- Within the 72 hour period of the 11/22/99 continuous pumping test, the cone of depression did not reach out to a boundary that would cause a significant change in appearance of the drawdown curves, such as becoming more steep.

- The aquifer at Diamond Head Ranch Golf Course is adequate to supply the irrigation well for long-term cyclic use as a supplemental water source for the golf course. This conclusion is based on the drawdown curves from the pump test, the lack of an apparent aquifer boundary within the 72 hour pump test, and the historical use of the well at the Diamond Head Ranch.

Please contact me if you have questions.

Sincerely,

Dean E. Eisenhauer, P.E.

University of Nebraska Lincoln
Institute of Agriculture and Natural Resources

Conservation and Survey Division
113 Nebraska Hall
901 North 17th Street
Lincoln, NE 68588-0517
Telephone (402) 472-3471

Geological and Natural Resources Surveys

IANR

August 24, 2001

Trent Anderson
Diamond Head Ranch Golf Course
900 N.W. 140th Street
Lincoln, NE 68528

Dear Mr. Anderson:

At your request I have reviewed the reports you faxed me from your consultants, Nickel Engineering and Dean Eisenhauer, P.E., regarding groundwater conditions on your property in the NW quarter of Section 19, Township 10 North, Range 5 East in Lancaster County, Nebraska. I also took a look at the water usage information you provided me as well as the drawdown data from the pump tests conducted by Nickel Engineering. I have spoken in the past with Tom Strauss, P.E., of Nickel Engineering about the hydrogeology of the area. I also have additional information in our files collected by Vince Dreeszen, P.G., Professor Emeritus of Conservation and Survey Division, University of Nebraska, Lincoln. My expertise is the area of groundwater resource evaluation and the following comments and conclusions are based on my review of the submitted information, existing file data, and the general hydrogeologic characteristics of the area.

The aquifer that supplies water to wells in the area consists of interbedded sandstone and shale of the Dakota Group. The direction of ground-water flow is generally to the east. Evidence from wells in the area show that water quality in the upper portion of the aquifer is fresh. Saline water is known to exist in the formation at a deeper elevation than the bottom of existing wells in the area. The bedrock is relatively near the land surface on your property. Consequently, the lack of impermeable overburden permits recharge of fresh water to the upper part of the aquifer.

The investigative approach the consultants took seems reasonable and I generally agree with their conclusions.

In my opinion, the aquifer at the property is adequate to supply the irrigation well for about 230 gpm of water usage. Routine operation of the irrigation well should not have a noticeable adverse impact on existing wells located on neighboring properties. It is understood that this well is to act as a secondary source of water to supplement the diverted/impounded surface water which will supply the majority of irrigation water for the proposed golf course.

If you have any questions or concerns, please call me at 472-7541.

Sincerely,

Scott Summerside

Scott Summerside, P.G.
Associate Geoscientist

Water Resources

Data Category: Ground Water | Geographic Area: Nebraska | GO

Ground-water levels for Nebraska

Search Results -- 1 sites found

Search Criteria

Site number contains string = 404806096522901
County = Lancaster

Save file of selected sites to local disk for future upload

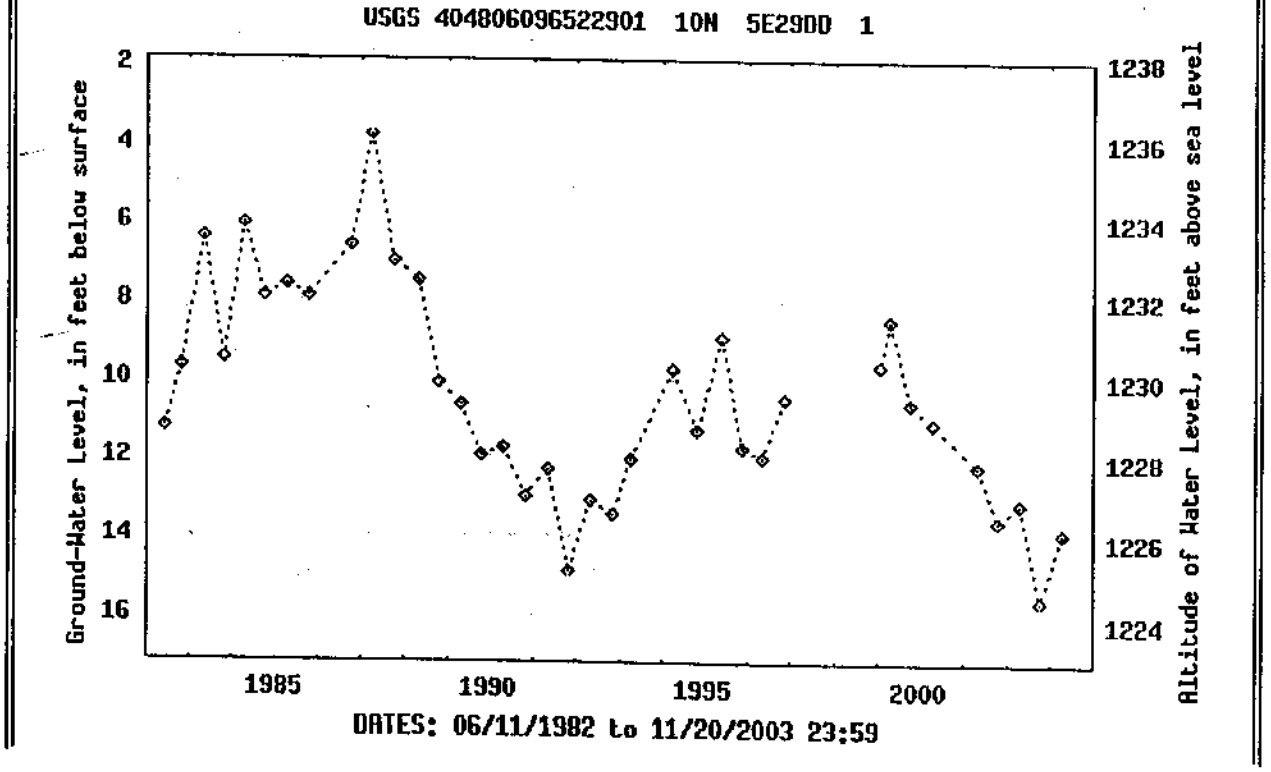
USGS 404806096522901 10N 5E29DD 1

Available data for this site Ground-water: Levels GO

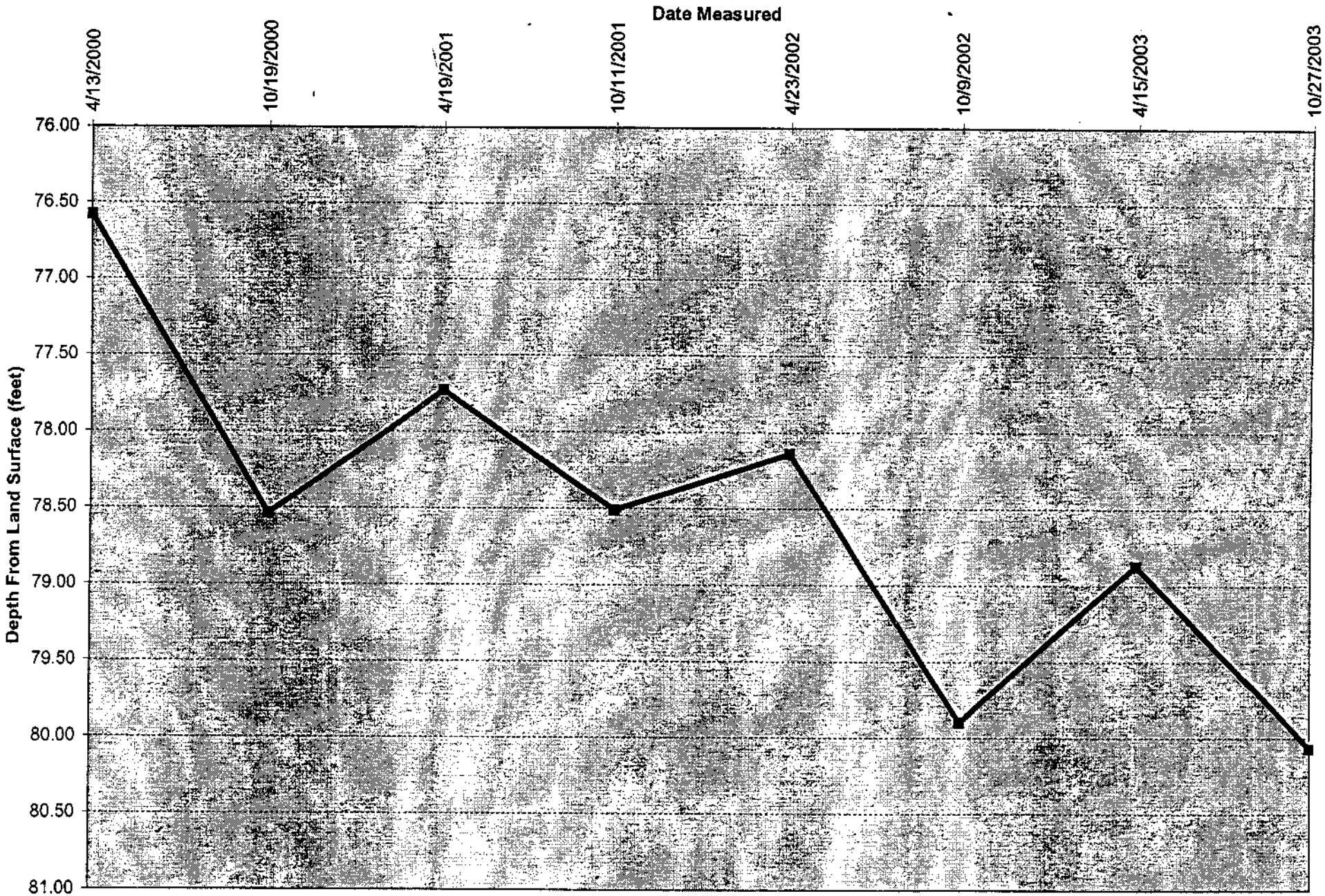
Lancaster County, Nebraska
Hydrologic Unit Code 10200203
Latitude 40°48'06", Longitude 96°52'29" NAD27
Gage datum 1,240.00 feet above sea level NGVD29
The depth of the well is 104.0 feet below land surface.

Output formats

- Table of data
- Tab-separated data
- Graph of data
- Reselect period



10N 5E 19 BB (Diamond Head G.C., Well #6)



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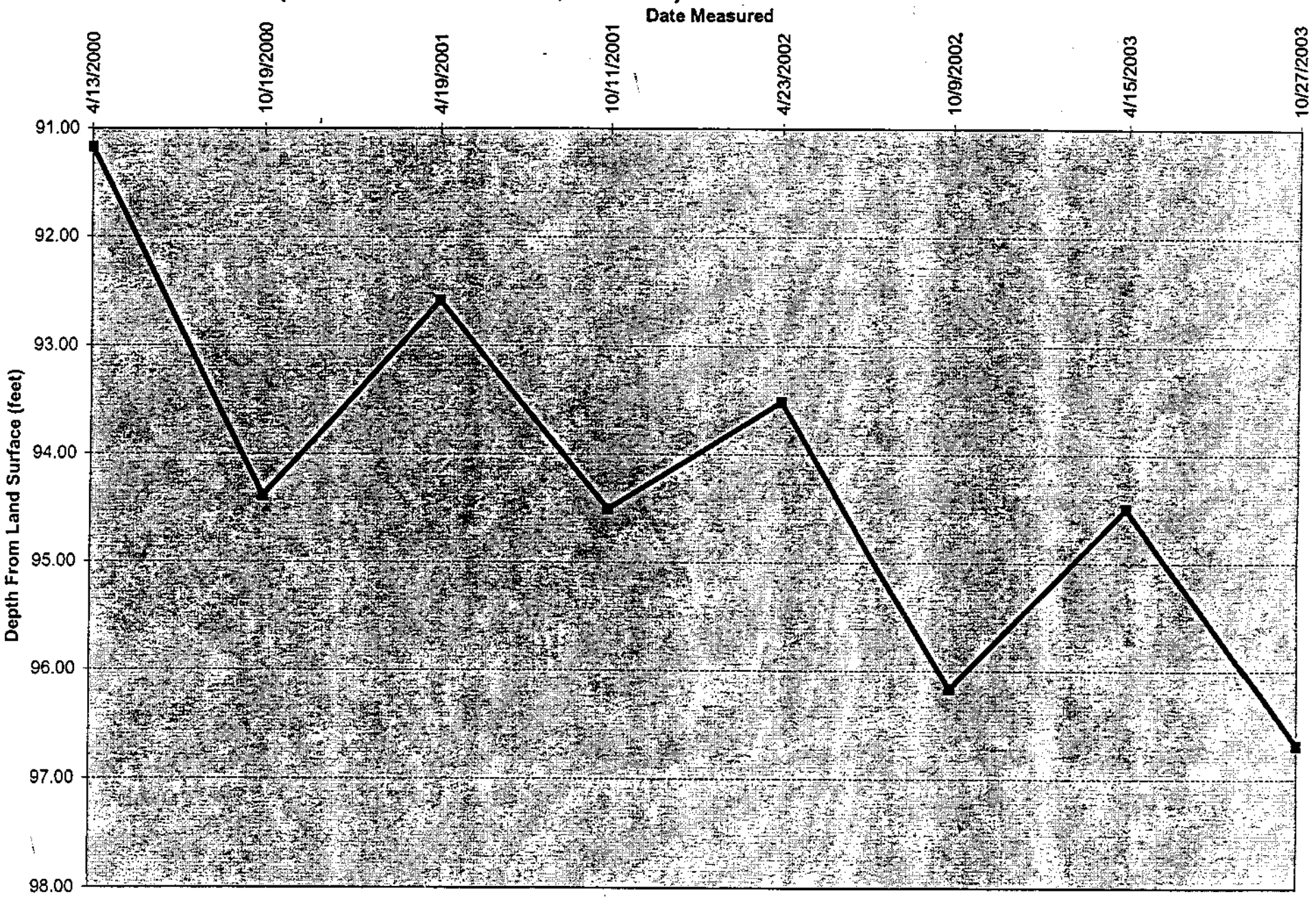

Lancaster County Engineering Department

DON R. THOMAS - COUNTY ENGINEER

DEPUTY - LARRY V. WORRELL
COUNTY SURVEYOR

DATE: December 16, 2003

TO: Mike DeKalb
Planning Department

FROM: Larry V. Worrell
County Surveyor

SUBJECT: OAK PRAIRIE PRELIMINARY PLAT AND CUP

This office has reviewed subject plat and would offer the following comments:

1) Dedication of 60 feet of right-of-way along West Holdrege Street and NW 140th Street shall be shown.

2) As per *Note 7*, Oak Prairie Circle shall be constructed and surfaced to Lancaster County standards.

3) The lot layout shall be modified to provide access to all lots from interior streets.

4) As per *Note 19*, all lots are permitted only one residential access.

5) As per *Note 8*, the developer shall be responsible for all signs required.

6) Additional information should be provided on the pond expansion and how the pond design relates to the residential lots.

7) The 100 year FEMA floodplain does not match the land contours. Additional hydrological or grade studies shall be submitted to determine minimum building elevations for Lots 7, 8 and 9.

8) Culvert design and drainage area information is needed for the culvert under Oak Prairie Circle.

9) The existing profile of West Holdrege Street is not accurate and should be field verified.

10) *Note 11* refers to an existing farm access on West Holdrege Street that is not shown.

cc: Russell Daehling - Seward County Highway Supt.

LW/DP/bml
Subdiv.wk/Oak Prairie Preliminary Plat & CUP

LINCOLN-LANCASTER COUNTY HEALTH DEPARTMENT
INTER-OFFICE COMMUNICATION

TO:	Mike DeKalb	**DATE:**	December 16, 2003
DEPARTMENT:	Planning	**FROM:**	Chris Schroeder Doug Smith
ATTENTION:		**DEPARTMENT:**	Health
CARBONS TO:	EH File EH Administration	**SUBJECT:**	Oak Prairie NW 140th & W Holdrege

The Lincoln-Lancaster County Health Department (LLCHD) has reviewed the proposed Oak Prairie development with the following items noted:

- 100 year flood plain exists on the site. The applicant has acknowledged this and does not propose the placing of lots or roadways in the flood plain.

- Individual on-site wastewater treatment systems are proposed for the site. Soil maps indicate that eight different soil types exist on the site. The applicant has acknowledged in the site plan's notes that percolation tests results may require the installation of lagoons or non-standard systems based on the results. A seasonal high water table may be perched 1 to 3 feet below the surface in the spring in some years on the lots with portions of Wymore or Mayberry soils. Additional design considerations such as curtain drains may be needed.

- Water for domestic use will be supplied by individual wells. The groundwater report prepared by Vincent Dreeszen indicates the supply is adequate and should have minimal impact on other users. The report recommends that a test well be drilled to determine availability of water and its quality before the construction of a home on the proposed lots.

- All wind and water erosion must be controlled during construction. The Lower Platte South Natural Resources District should be contacted for guidance in this matter.

- During the construction process, the land owner(s) will be responsible for controlling off-site dust emissions in accordance with Lincoln-Lancaster County Air Pollution Regulations and Standards Article 2 Section 32. Dust control measures shall include, but not limited to application of water to roads, driveways, parking lots on site, site frontage and any adjacent business or residential frontage. Planting and maintenance of ground cover will also be incorporated as necessary.

- Interstate 80 is located approximately 1500 feet from this proposed development. With the pending widening of interstate 80 and the relatively low background noise levels in this area, this proposed development could be impacted by noise pollution from Interstate 80.

John P Callen

12/17/2003 03:05 PM

To: Michael V Dekalb/Notes@Notes
cc: Dale L Stertz/Notes@Notes
Subject: Oak Prairie CUP

Mike,

Based on our review of the Oak Prairie subdivision/CUP proposal, Building and Safety has the following comments:

- The tributary in the northeast corner of the subdivision should be studied and 100-year water surface elevations produced. This should be done in the interest of protecting potential buyers and providing additional information regarding the flood risk for lots 7,8, and 9. It is particularly important for lot 9, as the topography may indicate that a significant portion could be floodplain (depending on study results).

- A study does not appear to be necessary for the southern tributary, as no new lots for residential use are being placed in or near this area.

- As a side note, while the pond expansion is beyond floodplain regulatory concerns, it may be advisable for the engineer to establish potential 100-year water surface elevations in order to make the applicant aware of any potential flooding issues. If any exist, the applicant may want to place minimum opening elevations on these lots accordingly.

Please let me know if you have any questions.

John P. Callen
Associate Engineer
City of Lincoln Dept. of Building and Safety
(402) 441-4970

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / www.outdoornebraska.org

December 18, 2003

Mike Dekalb
Lincoln/Lancaster County Planning Department
555 S. 10th Street, #213
Lincoln, NE 68508

Dear Mr. Dekalb:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed the information regarding the Oak Prairie project, preliminary plat #03010. The National Wetlands Inventory (NWI) map does show four palustrine semi-permanently flooded(PUBFh) wetlands within the quarter section. However, the project drawings show that these areas will not be affected. The drawings also show that the creeks and associated riparian corridors running through the area will be left undisturbed, as there will be no construction within the floodplain. Please advise if further review is required, or if plans change. If you have any questions, please contact me at (402) 471-5423.

Sincerely,

Carey Grell

Carey Grell
Environmental Analyst
Realty and Environmental Services Division